RURAL DEVELOPMENT AND CO-OPERATION SECRETARIAT

NOTIFICATION

No. RDC 124 CWM 75, dated 21st June 1978

The draft of the following rules further to amend the Karnataka Weights and Measures (Enforcement) Rules, 1959 which the Government of Karnataka proposes to make in exercise of the powers conferred by section 42 of the Karnataka Weights and Measures (Enforcement) Act, 1952 (Karnataka Act 2 of 1959) is hereby published as required by sub-section (4) of the said section in super session of GSR 422 (RDC 124 CWM 75) of 4/6-12-1976 for the information of all persons likely to be affected thereby and notice is hereby given that the said draft rules shall be taken into consideration on or after July 1978.

Any objection or suggestion which may be received from any person by the State Government in respect of the said draft before the date specified above will be considered by the Government. Objections or suggestions may be addressed to the Commissioner, Special Economic Programmes and *Ex-Officio* Secretary to Government of Karnataka, Rural Development and Co-operation Department, Vidhana Soudha, Bangalore.

DRAFT RULES

1. Title and Commencement: (1) These rules may be called the Karnataka Weights and Measures (Enforcement) (Amendment) Rules 1978.

(2) They shall come into force at once.

2. Amendment of Schedule VI:—In Schedule VI of the Karnataka Weights and Measures (Enforcement) Rules, 1959,

(1) for part II of the following parts shall be substituted, namely:

PART—II BEAM SCALES

1. Definitions:

(a) Beam Scale:—A weighing instrument with equal arms having three knife-edges, three bearings, an indicator (Pointer) in the Centre, and pans suspended from the end knife edges (see fig. 1)

(b) Sensitiveness of a Beam Scale:—A measure of its responsiveness to a small change in load in one of the pans under specified conditions of loading; this can be expressed as the ratio between the

change in mass in one of the pans and the corresponding deflection of the beam (or of the attached pointer) caused by the change.

(i) In the case of the beam scale fitted with a pointer and an indicating scale, it is expressed in terms of milligrames per division.

(ii) In the case of a beam scale having no indicating scale, it is expressed as the least weight, required to be added to or removed from one of the pans, which causes an appreciable movement of the pointer from its position of equilibrium under specified condition of loading.

(c) Error (due to Inequality of Arms) The error due to inequality of arms of a beam scale is equal to the mass of the additional weights required to bring to equipoise the balance, carrying weights of equal masses in the pans.

(d) Greatest Error (Due to Inequality of Arms)—The greatest error due to inequality of arms is the error determined with two weights each equal to the capacity (full load) of the balance.

2. Classes and Capacities :

(a) Beam Scales shall be of any one of the four classes namey A.B.C. or D. bases on limits for sensitiveness and greatest error specified in table 16 to 19 respectively.

(b) Beam scales of the different classes shall be of one of the capacities mentioned in table 16 to 19.

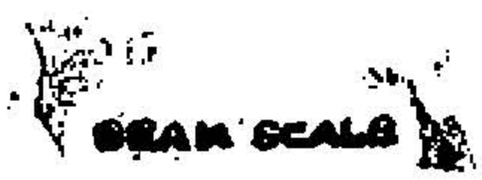
(c) The trade for which the different classes of scales may be used are :

Class of Scale	Use
A	Commercial assay and in 'Dharam Kaantha' for verfying the weights of bullion and precious stones.
B	Precious stones, Jewels, Pearls, bullion, precious metals, saffron and similar expensive commodities, chemists and druggists preparations, perfumery etc.
C	Base metals and commodities such as cereals, tea, coffee, tobacco, jute, cotton, dry fruits, spices, oil seeds, etc.
D	Weighment of cheaper commodities such as scrap iron, fuel, wood, charcoal, vegetables etc.,

3. Materials :

(a) Material for class A Beam Scales :—Class A beam scales shall be made of non-magnetic materials only except knife-edges and bearings.

(b) Materials for other class of beam scales :—Beams and pans shall be made of stainless steel, mild steel, brass or bronze.



Alluminium alloy may be used in the smaller de nomination balances, having a capacity of not more than 50 g. The pans of class–B beam scales may be made of glass also. In the case of beam scales of classes C and D pans of hard–wood shall be permitted for capacities 100 kg. and above. The pans of beam scales, when made of timber, shall be adequately reinforced and protected against wear.

(c) Suspension :—Pans shall be suspended from the beam by metal chains or metal stirrups, except those of 100 g. and smaller capacity of Class B beam scales which may be suspended by silk or nylon threads.

(d) All mild steel parts used in beam scales shall be suitably protected against rust.

4. Construction:

(a) Knife–edges and bearings..—(i) The knife–edges and bearings used in beam scales shall be one of the following types:–

(a) 'Agate–box' Wherein agate bearings are fitted in a brass or iron box with side holes which permit the projecting ends of the knife edges to pass into the boxes and rest on or rise to their bearings. (*see* fig. 2)

b) 'Dutchend'—Wherein the end bearings are fixed inside plates bolted together across the beam to form a shackel (*see* fig. 3)

(c) 'Swan–neck'—Wherein the ends are curved and slotted the bottom of the slot forming a knife–edge the extremities of the beam being widened in a direction at right angles to its length so that the base of the slot is parallel to the central knife–edge(*see*fig. 4)

(d) 'Continuous knife'–edge.—Wherein the knife–edges bear along their whole length (*see* fig. 5).

FIG-2

FIG-2. ACATE. BOK BEAM

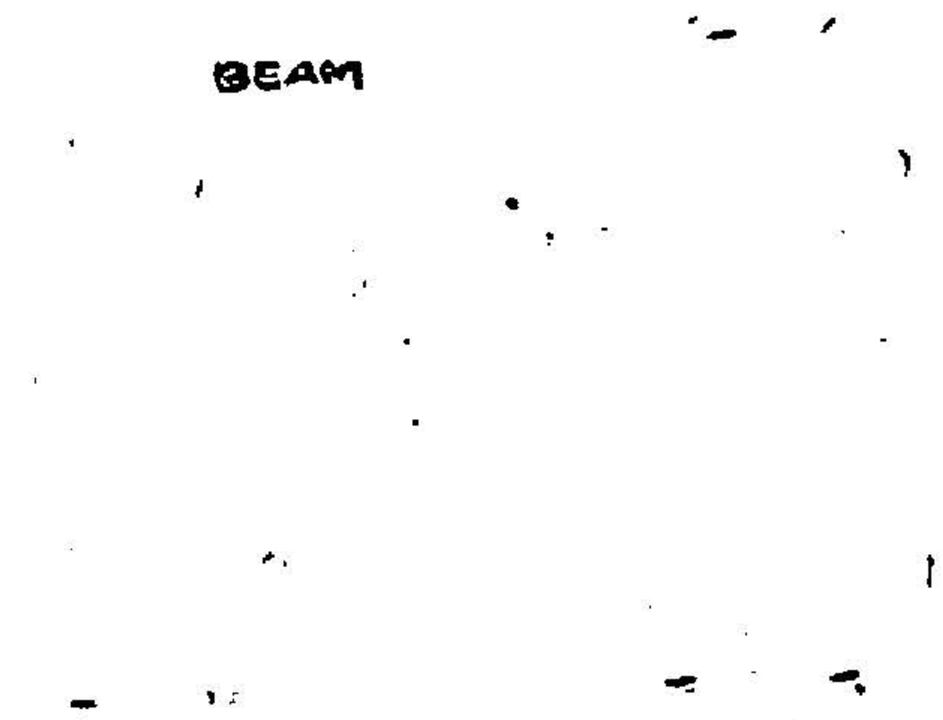


FIG-3 DUTCH. END BEAM

FIG-4 SWAN-NECE BEAM

FIG-5. CONTINUOUS KNIFE-EDGE

(ii) Class A beam scales shall have continuous knife-edges and shall be provided with means for relieving all the knife-edges from the bearings.

(b) Glass case :—Every beam scale of Class-A shall be provided with a glass case. It shall also be provided with bubble or a plumb line and levelling screws to facilitate levelling of the instrument.

(c) Leading Dimensions :—(i) No dimensions have been specified for class A beam scales.

(ii) Beam scales of classes B, C and D shall have the leading dimensions specified in tables 5 to 9 and fig. 6 to 10 as applicable to within the tolerances specified in 4(d). For Class-C beam scales of capacities 5 kg. and below fixed hooks may also be provided.

Note :—Class D beam scales shall be distinguished from Class-C scale by the existence of two identical holes, 5 to 10 mm in diameter through the beam, one on either side of the central knife-edge (see also fig. 10).

(d) Permissible variation in dimensions :—The dimensions of the beam scales shall not vary by more than 10 per cent of the dimensions presdribed in tables 5 to 9.

(e) Attachment for adjusting the balance of a beam scale :—

(i) Beam scales of Class B having a capacity of 5 kg. and above shall be provided with a balance ball or balance box securely attached to one of the suspension chains or pans in such a manner that it is not possible to alter it easily. The balance ball or balance box shall not be so large as to contain more loose material than an amount exceeding half a kilogram for beam scales of capacity 50 kg. and above.

(ii) Beam scales of Classes C and D having a capacity of 100 Kg. and above shall be provided with a balance ball or balance box securely attached to one of the suspension chains or pans a manner that it is not possible to alter it easily. The balance ball or balance box shall not be so large as to contain more loose materials than an amount exceeding one per cent in weight of the capacity of beam scales under 100 Kg. if provided, or an amount exceeding 1 Kg. for beam scales of capacity 100 Kg. and above.

FIG-6 BEAM SCALE, CLASS B (FLAT TYPE)

FIG-7 BEAM SCALE. CLASS C (DUTCH-END TYPE)

FIG-8 BEAM SCALE CLASS C (SWAN NECK WITH SEPARABLE FLAT HOOKS)

FIG-9. BEAM SCALE, CLASS B (OPEN PATTERN TYPE)

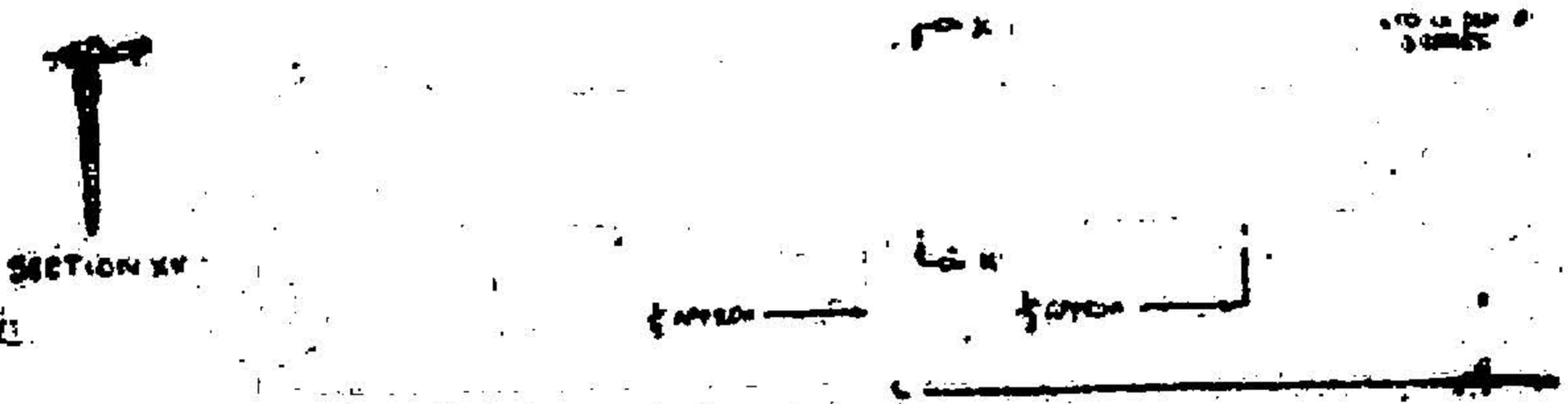


FIG-10. BEAM SCALE CLASS D SWAN-NECK WITH FIXED FLAT HOOKS

(f) Arraugement for adjusting sensitiveness:—Beam Scales o t he than those of class-A shall not be provided with an attachment to adjust there sensitiveness.

5. Tests: (a) Sensitiveness:—Class A beam scales shall be tested for sensitiveness at Zero and full loads and shall comply with the requirements specified in table I. Beam scales other than Class-A shall be tested for sensitiveness at full load only and shall comply with the requirements specified in tables 17 to 19.

(i) Class A beam Scales:—For determinining the sensitiveness of a class A beam scale at no load, the beam scale shall be properly balanced without any load in the pans. A small weight whose mass is accurately known shall be put on one of the pans. This small weight shall be so chosen that the turning points of the pointer remain within the reading index. The rest point shall be determined by the usual oscillation method. The weight shall then be transferred to the other pan and the second rest point shall be

determined. The shift of the rest point is a measure of sensitivenessr If this shift is 'w' mg. the sensitiveness 'S' in milligrams pe. division, at no load, is given by the relation :

$$S = \frac{2w}{n}$$

Similar test, with appropriate weights in each pan representing the full capacity of the beam scale, shall be performed to determine the sensitiveness of the beam scale at full load.

(ii) Class :—A beam scale 2 g. to 20 g. As it is not practicable to make weights of denominations very much of smaller than one milligram, the sensitiveness of beam scales of smaller capacities, that is, from 2 g. to 20 g., shall be determined by means of a pair of weights, each weight having a mass of approximately 5 mg. The difference in the masses of the two weights in the pair shall be adjusted to be of the order of 0.05 mg. 0.12 mg. 0.25 mg. or 0.50 mg. depending on the beam scale under test, that is, for testing 2 g., 5 g. 10 g. or 20 g. the beam scale, respectively. This difference should be known accurately. After balancing the beam scale at zero load, one of the two weights in the pair shall be put on the right pan and the other weight on the left pan. The rest point shall be determined. The two weights shall then be interchanged and the second rest point shall be similarly determined. If the rest point shifts by 'n' divisions and if the difference between the masses of the two test weights is 'w' mg., the sensitiveness 'S' of the beam scale in milligrams per division at zero load is given by the relation :

$$S = \frac{2w}{n}$$

To determine the sensitiveness of the beam scale at full load a similar test shall be performed with weights equal to the maximum capacity of the beam scale in each pan.

(iii) Beam scales of Classes other than A with pointer above beam. Pans of a beam scale other than Class A shall be loaded with weights representing its full capacity and the scale balanced. Weights of such mass shall then be added on one of the pans as may move the tip of the pointer from its equilibrium position by an appreciable distance. After removing these weights the same test shall be repeated on the other pan and the weights required for moving the tip of the pointer by the same distance on the other side of the equilibrium position shall then be added. If these weights are denoted by 'w1' and 'w2' respectively, the sensitiveness 'S' of the beam scale is given by the relation :

$$S = \frac{w1 + w2}{2} -$$

(b) Inequality of Arms Test–(i) Class, A Beam Scale :—The error due to inequality of arms of a class–A beam scale shall be determined by loading both the pans with weights made from the same material and representing the full capacity of the scale. The scale shall then be properly balanced by adding the small weights. After arresting the beam, the loads including the small weights shall be interchanged and the scale balanced again by putting additional weights on one of the pans. The additional weight, required to balance the scale the second time, shall be equal to twice the error caused by the inequality of the arms of the beam.

(ii) Beam scales other than class–A.:—In the case of beam with fixed the beam with hooks but without chains and pans shall be checked for balance. If detachable hooks are provided, the beam alone shall be checked. The chains and pans shall then be attached in the case of both the types of balance and checked again for balance.

After checking at no load, each of the pans shall be loaded with weights equal to the marked capacity of the scale and the scale shall be balanced.

The loads thereon shall then be interchanged and the beam scale balanced again by adding necessary weights on one of the pans. The additional weight shall be equal to twice the error due to inequality of arms of the beam.

In the case of beams with attached hooks, the loads shall be interchanged along with the chains and pans, and in the case of beams with detachable hooks the loads shall be interchanged along with the hooks, chains and pans.

(iii) The figure so obtained shall be halved to determine the error at full load. These should lie within the limits specified in tables 16 to 19.

6. Shift test : (i) Class A beam scales :—The pans of the beam scale shall be loaded with weights representing half its capacity and the scale properly balanced. Shifting the weight in one of pans gently to different positions on the pan after arresting the beam and releasing again shall not produce any appreciable difference in the balance of the beam scale. Moving the weight on other pan in a similar manner shall also not produce any appreciable difference in the balance of the beam.

(ii) Beam Scales other than Class A – with the pans loaded to half the capacity no appreciable difference in the accuracy of the instruments shall result from moving the knife-edges or bearings laterelly or backwards and forwards within their limits of movement.

Similarly, when the above load is moved to any position on the pan, the difference shown shall not be appreciable.

Note :— The words 'appreciable difference' shall mean a difference which can be detected but the Inspector should exercise his discretion in each particular case.

6. Sealing.

(a) All weighing instruments shall be provided by the manufacturer with a plug/plugs or stud/studs of soft metal to receive the stamp or seal of the verifying authority. Such plug/plugs or stud/studs shall be provided in a conspicuous part of the instrument and shall be mabe in such a manner as to prevent its removal without obtaining the seal/seals.

TABLE–16

Limits for sensitiveness anb greatest error for beamscales

CLASS–A

Capacity	Verification		Inspection	
	Sensitiveness per division of scale at no load and at full load	Greatest error allowed when fully loaded	Sensitiveness per division of scale at no load and at full load	Greatest error allowed when fully loaded
1	2	3	4	5
	mg	mg	mg	mg
2 g	0.02	0.04	0.06	0.08
5 g	0.05	0.10	0.15	0.20
10 g	0.10	0.20	0.30	0.40
20 g	0.20	0.40	0.60	0.80
50 g	0.50	1	1.5	2
100 g	1	2	3	4
200 g	2	4	6	8
500 g	5	10	15	20
1 kg	10	20	30	40
2 kg	20	40	60	80
5 kg	30	60	90	120
10 kg	50	100	150	200
20 kg	100	200	300	400
50 kg	200	400	600	800

TABLE-17

Limits for Sensitiveness and Greatest Errors for Beamscales

CLASS-B

Capacity	Verification		Inspection	
	Sensitiveness at no load and full load	Greatest error allowed when fully loaded	Sensitiveness at no load and at full load	Greatest error allowed when fully loaded
1	2	3	4	5
2 g	1 mg	2 mg	3 mg	4 mg
5 g	2 ,,	4 ,,	6 ,,	8 ,,
10 g	3 ,,	6 ,,	9 ,,	12 ,,
20 g	5 ,,	10 ,,	15 ,,	20 ,,
50 g	10 ,,	20 ,,	30 ,,	40 ,,
100 g	20 ,,	40 ,,	60 ,,	80 ,,
200 g	30 ,,	60 ,,	90 ,,	120 ,,
500 g	50 ,,	100 ,,	150 ,,	200 ,,
1 kg	100 ,,	200 ,,	300 ,,	400 ,,
2 kg	200 ,,	400 ,,	600 ,,	800 ,,
5 kg	300 ,,	600 ,,	900 ,,	1.2 g
10 kg	500 ,,	1. g	1.5 g	2 g
20 kg	1 g	2. g	3 g	4 g
50 kg	2 g	4. g	6 g	8 g
100 kg	5 g	10. g	15 g	20 g
200 kg	10 g	20. g	30 g	40 g

TABLE-18

Limits of sensitiveness and greatest errors for Beamscales

CLASS-C

Capacity	Verification		Inspection	
	Sensitiveness at no load and at full load	Greatest error allowed when fully loaded	Sensitiveness at no load and at full load,	Greatest error allowed when fully loaded
1	2	3	4	5
100 g	100 mg	200 mg	300 mg	400 mg
200 g	200 ,,	400 ,,	600 ,,	800 ,,
500 g	500 ,,	1 g	1.5 g	2 g
1 kg	1 g	2 g	3 g	4 g
2 ,,	2 g	4 g	6 g	8 g
5 ,,	3 g	6 g	9 g	12 g
10 ,,	5 g	10 g	15 g	20 g
20 ,,	10 g	20 g	30 g	40 g
50 ,,	15 g	30 g	45 g	60 g
100 ,,	25 g	50 g	75 g	100 g
200 ,,	50 g	100 g	150 g	200 g
300 ,,	75 g	150 g	225 g	300 g
500 ,,	100 g	200 g	300 g	400 g
1000 ,,	153 g	300 g	450 g	600 g

TABLE-19

Limits of Sensitiveness and Greatest Errors for Beamscales Class-D

1	2	3	4	5
KG	G	G	G	G
1	1	2	3	4
2	2	4	6	8
5	5	10	15	20
10	10	20	30	40
20	20	40	60	80
50	30	60	90	120
100	50	100	150	200
200	100	200	300	400
300	150	300	450	600
500	200	400	600	800
1000	300	600	900	1200

TABLE-19 A

Leading Dimensions of Beam class (with pointer above the Beam)

Capacity	Length between the end (Nominal)	Depth at the Centre (Nominal)	Thickness of plate at the Centre (Nominal)
1	2	3	4
	mm	mm	mm
2 g	70	10	2
5 g	95	12	2
10 g	100	15	2
20 g	120	20	3.15
50 g	135	22	3.15
100 g	150	25	4
200 g	170	25	5
500 g	200	30	5
1 kg	250	40	6
2 kg	300	45	6
5 kg	450	50	6
10 kg	500	58	8
20 kg	600	58	10
50 kg	750	100	15
100 kg	1000	110	18
200 kg	1250	125	25
	Open pattern (bridge) type		
220 g	170	25	5
500 g	260	37	5
1 kg	310	44	5
2 kg	350	48	5
5 kg	450	60	6
10 kg	500	70	8
20 kg	600	80	10
50 kg	750	120	15
100 kg	1000	150	20

TABLE–19 B

Leading dimension of Beam Class 'B'

(plant and open pattern type with pointer below the beam)

1	2	3	4
	mm	mm	mm
2 g	70	3	2
5 g	95	3	2
10 g	110	4	2
20 g	120	20	3.15
50 g	135	20	3.15
100 g	150	20	4
200 g	200	20	6
550 g	235	25	8
1 kg	300	30	8
2 kg	320	30	8
5 kg	350	32	10
10 kg	400	40	12
20 kg	500	50	14
50 kg	700	70	18
100 kg	800	80	20
200 kg	1250	125	25

TABLE–19 C

Leading Dimensions of Beam, Class C (Swan Neck Type)

1	2	3	4
100 g	150	30	4
200 g	200	40	5
500 g	300	40	6
1 kg	350	45	6
2 kg	400	45	6
5 kg	550	70	6
10 kg	600	80	6
20 kg	750	108	8
50 kg	900	116	8
100 kg	1200	138	14
200 kg	1350	148	16
300 kg	1650	154	18
500 kg	1800	178	25
1000 kg	2000	200	32

TABLE-19 D

Leading Dimensions of Beam Class C (Duck end type)

1	2	3	4
	mm	mm	mm
100 kg	150	35	4
200 kg	200	40	5
500 kg	300	40	6
1 kg	350	45	6
2 kg	400	45	6
5 kg	450	70	6
10kg	450	75	8
20kg	600	75	8
50kg	750	80	8
100kg	900	120	14
200kg	900	133	16
300kg	1050	142	16
500kg	1350	192	20
1000kg	1650	203	25

TABLE 19 E

Leading Dimensions of Beam, Class 'D'

Capacity	Length between the end knife edges (Nominal)	Depth at the centre (Nominal)	Thickness of plate at the centre knife edge (nominale
	L	D	T
1	2	3	4
Kg	mm	mm	mm
Swan-neck with fixed flat hook			
1	350	45	6
2	400	45	6
5	550	70	6
10	600	80	6
20	750	108	6
50	900	116	8
100	1200	138	14
200	1350	148	16
300	1650	154	18
with detachable flat hooks			
500	1800	178	25
1000	2000	200	32

PART II-A-PORTABLE SCALE FOR JEWELLERS

1. General : This part deals with the requirements of portable scale for Jewellers for weighing diamonds, pearls and other jewels.

2. Definitions : For the purpose of this part, portable scale for jewellers shall mean equal armed beam scale of capacity not exceeding 100 carats.

3. Capacity : Portable scales for jewellers shall be of capacities 10, 20, 50 and 100 carats.

4. General requirements : (a) The beam shall be made of aluminium, brass, nickle-silver, mild steel or stainless steel.

(b) The beam shall be of swan neck type or box end type.

(c) The pans shall be made of aluminium, brass, bronze, nickle-silver of stainless steel. The pans shall be hung by wire stirrups, chains of aluminium, brass, bronze, nickel silver of stainless steel or by thread of silk or nylon.

(d) All the three knife-edges, in the cases of both swan neck and box end type scales, shall be hardened steel.

(e) The central fork shall incorporate hardened steel bearings of bush type, firmly fitted and secured.

(f) The pan suspension shall be hooks of figure 8 or rings and made of hardened steel.

(g) The beam shall be fitted with an indi ator (pointer) on the top in the centre with sufficient length to show appreciable deflection. It shall be made of aluminium, brass, bronze, steel or stainless steel wire and firmly fitted into the beam.

(h) The Central fork shall have a suspension hook to suspend the scale freely in use.

(i) The fork suspension hook shall also carry a metal lable for markings as specified under clause 7.

(j) The fork snspension hook shall be brazed at its ends to prevent the above fork suspenion or label being easily removed. The label shall be made of aluminium, brass, bronze, copper, nickle-silver or stainless steel sheet.

(k) The scale shall have a pocket carrying case to prevent damage to it.

5. Leading Dimensions.

(a) The leading dimensions for portable Scale for jewellers shall be as specified in Table 19 F.

TABLE 19 F

Leading Dimensions for Portable scales for Jewellers.

Capacity carat	Length of beam nominal	Cross-section of Beam Depth X Thickness Nominal	Pan Diameter nominal
	mm	mm × mm	mm
10	70	3 × 2	20
20	80	4 × 3	25
50	90	5 × 3	30
100	100	5 × 4	35

Note : Permissible variation + 10 per cent of the dimensions.

6. Tests : (a) The beam shall remain horizontal without load when in equilibrium,

(b) In the case of beams with detachable suspension hooks and pans, when interchanged, the beam shall maintain its equilibrium at no load.

(c) The scale shall be tested for sensitiveness and error when loaded in each pan with full load equivalent to its capacity.

(d) The limits of sensitiveness and error for portable scales for jewellers at full load shall be as given in Table - 19 G

TABLE 19G

LIMITS OF SENSITIVENESS AND ERROR FOR PORTABLE SCALE FOR JEWELLERS

Capacity Carat	Sensitivity Cent	Errors at full load cent
10	0.5	1
20	0.5	1
50	1	2
100	1	2

7. Markings :—

(a) The metal lable fixed in the fork suspension hook shall be 50 mm × 20 mm. It shall be marked on one half side with the capacity and the maker's name. The other half shall be left blank for receiving the inspector's stamp.

(b) The capacity shall be inscribed on the metal plate in the following manner :—

To weigh.....c.

8. Seal:

The Inspector's stamp shall be put on the metal lable mentioned in clause 4(i)

(2) In Part III for tables 20 and 21 the following tables shall be substituted namely :—

TABLE 20 SENSITIVENESS AND ERRORS FOR PLATFORM MACHINES

Verification				Inspection		
Capacity	Sensitiveness when fully loaded	Greatest error allowed in excess or in deficiency when fully loaded for		Sensitiveness when fully loaded	Greatest error allowed in excess or in dificiency when fully loaded for	
		Non-dial type machines	Platform machines fitted with dials		Non-dial type machines	Platform machines fitted with dials
1	2	3	4	5	6	7
10 Kg	2 g	4 g	A weight corresponding to one half the interval between consecutive minimum graduations.	6 g	8 g	A weight corresponding to the interval between consecutive minimum graduations.
20 Kg	2 g	8 g		12 g	15 g	
50 Kg	10 g	20 g		30 g	40 g	
100 Kg	20 g	40 g		60 g	80 g	
150 Kg	30 g	60 g		90 g	120 g	
200 Kg	40 g	80 g		120 g	160 g	
250 Kg	50 g	100 g		150 g	200 g	
300 Kg	60 g	120 g		180 g	240 g	
500 Kg	100 g	200 g		300 g	400 g	
1000 Kg	125 g	250 g		345 g	500 g	
1500 Kg	200 g	400 g		600 g	800 g	
2000 Kg	250 g	500 g		750 g	1000 g	
3000 Kg	300 g	1000 g		900 g	2000 g	

TABLE: 21 Range of Balancing Arrangement of Plantform machines.

Capacity.	Range of Balancing Arrangement.		
	Muximum 0.5 per cent of capacity	Minimum 0.25 per cent of capacity.	Not less than) 0.125 per cent each x way
10 Kg.	50 Kg.	12.5 Kg.	...
20 ,,	100 ,,	25 ,,	...
50 ,,	250 ,,	120 ,,	60 Kg.
100 ,,	500 ,,	250 ,,	120 ,,
150 ,,	750 ,,	370 ,,	180 ,,
200 ,,	1000 ,,	500 ,,	250 ,,
250 ,,	1.3 ,,	620 ,,	310 ,,
300 ,,	1.5 ,,	750 ,,	370 ,,
500 ,,	2.5 ,,	1.25 ,,	620 ,,
1000 ,,	5.0 ,,	2.50 ,,	1.25 ,,
1500 ,,	7.5 ,,	3.75 ,,	1.87 ,,
2000 ,,	10,0 ,,	5.00 ,,	2.50 ,,
3000 ,,	15.0 ,,	7.50 ,,	3.75 ,,

(3) after part VI the following part shall be inserted namely:-

"PART VI-A TUBULAR BALANCES

1. General

This part deals with the requirements for Tubular Balances with graduated scale.

2. Definitions

A tubular balance shall mean a weighing instrument, which on the application of the load be weighed. indicated the wight of the load by the extension of a spring, such extension being indicated by means of a pointer on a graduated scale, which is longitudinally marked on the tube.

3. Capacities:

The capacities and the maximum permissible errors on tubular balances shall be as specified in Table.

4. General Requirements

(a) The body of the instrument shall be made or manufactured from brass, bronze, aluminium, mild steel or any other suitable material but the tubes shall be made or manufactured from non-rusting material only. The body of the balance sapll be robust in construction.

(b) If a pan or a scoop is provided, it shall be made of brass, bronze, aluminium, mild steel, stainless steel or polystyrene metal, Chains, hooks or metal supports shall be provided if the pan or scoop is suspended. When the pan is made or manufactured from mild steel it shall be suitably protected against errosion.

(c) The indicating device shall be divided into graduations representing equal weights into equal divisions and the distance between the lines representing minimum graduation shall be not less thad 1.25 mm.

(d) The weight corresponding to the minimum graduation shall not exceed the values given the Table.

(e) When the graduation commences at a fixed load, the position of the pointer, when there is no load, shall be clearly indicated by a zero mark

(f) The tubular balance shall be suspended permanently from a stand, support or brauket.

(g) The scale shall be provided with a device to prevent the effect of any over-loading which may adversely affect its metrological qualities.

5. Tests.

(a) The maximum permissible error shall not be exceeded when the load is applied (on book or in pan or scoop) (See Table)

(b) Each graduation shall be tested for accuracy.

(c) The balance shall be correct, whether the test is made by progressively increasing or decreasing loads, provided that, in either case the spring shall be allowed to vibrate before the reading is taken.

(d) The differnce between the results of several weighments or the same test load shall not exceed the maximum permissible error fof the load.

(e) The balance shall be loaded to its full capacity and the load maintained for a period of 24 hours after which it shall be removed. Four hours after removal of the load, the balance shall not show any permanent set. Further, when tested as stated in sub-clause (c) of this clause, the balance shall record correct readings.

(f) The tubular balance shall not be tested for sensitiveness.

(g) The standard test weights used for the verification of the scale shall not be inaccurate by a relative error of more than 0.3 times see maximum permissib. error of the scale for the givin load.

6. Sealing.

A provision shall be made to seal the tubular balance by means of a soft lead plug or wire and wherever practicable this plug shall pass through the frame. The lead plug or wire seal shall be so supported as to allow on risk or injury to the instrument. The Inspector's stamp shall be affixed on the lead plug or on a suitable lead plug in conjuction with the wire.

TABLE-24A

Capacities and Maximum permissible Errore for Tubular Balance.

Capacity.	Maximum weights corresponding to the distance between minimum graduations.	Maximum permissible on initial verification
1	2	3
1 Kg.	20 Kg.	10 Kg
5 ,,	100 ,,	50 ,,
10 ,,	200 ,,	100 ,,
20 ,,	500 ,,	250 ,,
50 ,,	500 ,,	250 ,,

Note : Inspection errors shall be double the values shown in col. 3

TABLE 25

Sensitiveness and Errors for Weighbridges.

Capacity of Machine.	Sensitiveness when full loaded	Verification			Inspection.		
		Greatest error allowed in excess or in deficiency when fully loaded for		Sensitiveness when fully loaded	Greatest error allowed in excess or in deficiency when fully loaded for		
		Non-dial type machine	Machines fitted with dials.		Non-dial type machines	Machines fitted with dial.	
1	2	3		4	5	6	7
Kg		Kg		Kg	Kg	Kg	Kg
1,000	Kg. (1t)	1.1	1.2	2.4	3.3	2.4	4.8
2,000	,, (2t)	1.2	1.4	2.8	3.6	2.8	5.6
3,000	,, (3t)	1.3	1.6	3.2	3.9	3.2	6.4
5,000	,, (5t)	1.5	2.0	4.0	6.0	4.0	8.0
10,000	,, (10t)	2.0	3.0	6.0	6.0	6.0	12.0
15,000	,, (15t)	2.5	4.0	8.0	7.5	8.0	16.0
20,000	,, (20t)	3.0	5.0	10.0	9.0	10.0	20.0
25,000	,, (25t)	3.5	6.0	12.0	10.5	12.0	24.0
30,000	,, (30t)	4.0	7.0	14.0	12.0	14.0	28.0
40,000	,, (40t)	5.0	7.0	14.0	15.0	14.0	28.0
50,000	,, (50t)	5.2	7.8	15.6	15.6	15.6	31.2
60,000	,, (60t)	5.5	8.5	17.0	16.5	17.0	34.0
80,000	,, (80t)	6.0	10.0	20.0	18.0	20.0	40.0
1,00,000	,, (100t)	6.5	11.5	23.0	19.5	23.0	46.0
2,00,000	,, (200t)	9.0	19.0	38.0	27.0	38.0	76.0
2,50,000	,, (250t)	12.0	25.0		36.0	50.0	
		A weight corresponding to one half the interval between consecutive graduations.			A weight corresponding to interval between consecutive graduations.		

TABLE 26

Range of balancing agreement for weigh bridges.

Capacity	Range of balancing Arrangement.		
	Maximum 0.5 per cent of capacity	Minimum 0.25 per cent of capacity.	Minimum 0.125 per cent of capacity each way.
1,000 Kg	5 Kg	2.5 Kg	1.3 Kg
2,000 ,,	10 ,,	5.0 ,,	2.5 ,,
3,000 ,,	15 ,,	7.5 ,,	3.7 ,,
5,000 ,,	25 ,,	12.0 ,,	6.2 ,,
10,000 ,,	50 ,,	25.0 ,,	12.5 ,,
15,000 ,,	75 ,,	37.5 ,,	18.7 ,,
20,000 ,,	100 ,,	50·0 ,,	25.0 ,,
25,000 ,,	125 ,,	62.5 ,,	31.7 ,,
30,000 ,,	150 ,,	75.0 ,,	37.5 ,,
40,000 ,,	200 ,,	100.0 ,,	50.0 ,,
50,000 ,,	250 ,,	125.0 ,,	62.5 ,,
60,000 ,,	300 ,,	150.0 ,,	75.0 ,,
80,000 ,,	400 ,,	200.0 ,,	100.0 ,,
1,00,000 ,,	500 ,,	250.0 ,,	125.0 ,,
2,00,000 ,,	1000 ,,	250.0 ,,	250.0 ,,
2,50,000 ,,	1250 ,,	...	312.0 ,,

(4) after part X the following part shall be added, namely:—

"Part XI KITCHEN SCALES

1. General:

(a) This Part deals with the requirements of Kitchen Scales which are intended for measuring quantities of commodities for cooking purposes and other uses where great accuracy is not required.

(b) Kitchen scales shall not be used in any transaction for trade or commerce.

(c) Kitchen scales shall be verified before sale, and may be reverified, if the user so desires.

2. Definition:

A kitchen scale shall mean a weighing instrument having a goods pan and a graduated scale, which can be used for weighing commodities or ingredients for cooking purposes.

3. Capacity:

The capacities of Kitchen scales shall be as specified in Table 32.

4. General Requirements:

(a) The body, the pan or scoop and components of the Kitchen scale shall be constructed of suitable quality steel, non-ferrous mental or shock-absorbing plastic meterial sufficiently strong to with stand normal use, and capable of being easily cleaned. All steel parts shall be suitably protected to prevent rusting but the protective coating shall not be deleterious to health.

(b) The pan or scoop shall be easily removable and shall be smooth and capable of being cleaned easily. It shall not tip over when evenly filled. The scoop if provided, shall have cubic capacity of not less than one litre. It shall incorporate devices for pouring out easily the commodities weighed or measured in it.

(c) The scoop may also be provided with approximate volume indications. These indications may be accurate to within 10 per cent of the indicated volume.

Note: The volume may not be verified on every kitchen scale, but only on a few pieces in a lot.

(d) The indicating device shall be devided into graduations representing equal weights. The distance between the lines representing the minimum graduation shall be:

(i) not less than 1.25 mm, if the graduations are read directly, and

(ii) not less than 2 mm, after magnification, if a minifying device is provided.

(c) The eight corresponding to the minimum graduation shall not exceed the values given in table 32.

(f) The value of graduation shall be indicated only in metric units and shall be equal to a number of kilograms expressed by one of the following formulae:

1×10^n, 2×10^n or 5×10^n

when "n" represents either zero or a whole number, positive or negative.

(g) The total number of graduations shall not be less than 100 but not more than 1000.

(h) The dial and pointer may be enclosed by a suitable lens to increase legibility of the reading.

(i) The graduation lines shall be of seasonably uniform thickness throughout their length.

(j) Every fifth graduation line shall be longer and at least every tenth graduation line shall be numbered.

(k) The pointer may preferably be in a contrasting colour to to the graduation lines and the dial. The pointer may meet the graduation lines and may cover but not obscrue them, The width of the tip of lhe pointer shall not exceed the thickness of the graduation lines.

(l) Where the scale is graduated at every 20 g, graduation lines to indicate odd multiples of 50g may be provided on the side opposite to that bearing graduation lines of 20 g.

(m) When the graduation commences at a fixed loads the position of the pointer, when there is no load, shall be clearly indicated by a zeor mark.

(n) The scale may be provided with a zero setting device, The range of adjustment of the zero setting device, if provided, shall not exceed ten per cent of the capacity of the scale.

Notes: The large of adjustment is provided to accomodate the tare of other containers which might be placed on the pan for receiving viscous or other meterials.

(o) The scale shall be provided with a device to prevent the effect of any overloading which may adversely affect its metrological qualities.

5. Tests

(a) The scale shall be tested on a hard, flat and level surface,

(b) The difference on return to zero. immediately after removeing a load, equal to the capacity kept on the instrument for half an hour shall not exceed half the value of the minimum graduation.

(c) The maximum permissible error at any load upto full capacity shall not exceed the limits specified in Table 32 at the time of initial verification.

(d) The scale shall be correct within the maximum permissible errores, whether the test is made by progressively increasing or decreasing loads specified in Table 1. provided that, in either case; the spring if provided shall be allowed to vibrate before the reading is taken.

(e) When a weight equal to quarter of the maximum capacity is moved from the centre of the scoop or pan in any direction to a distance of 50 mm. the scoop or pan shall not tip or topple.

(f) The difference between the results of several weightments of the same test load shall not exceed the maximum permissible error for the load.

(g) Five per cent of one lot of kitchen scale shall be initially verified by placing a test load equal to the full capacity of the instrument, for a period of about 8 hours. The difference between the indication immediately after depositing the load and the constant indication obtained 8 hours later shall not exceed the maximum permissible error for that load.

(h) When tested for model approval, the kitchen scale shall not show an error exceeding twice the maximum permissible error, after being subjecred to 7,500 weighings at full load. These weighings shall be made quick suecession but shall be limited to not more than 20 weighing per hour.

(i) The standard test weights used for the verification of the scale shall not be inaccurate by a relative error of more than 0.3 times the maximum permissible error of the scale for the given load.

6. Sealing:

(a) Kitchen scales shall be provided with a soft plug, at a suitable place, to receive the Inspectors' stamp and this plug shall pass through the frame. The plug shall be so supported as to allow no risk or damage to the instruuent.

TABLE—32

Capacities, graduations and Maximum permissible errors for Kitchen scales

Capacity	Maximum weight corresponding to the distance between minimum graduation	Test load	Maximum permissible error, at initial verification
1	3	3	3
1 Kg.	10 g.	From 0 upto and including 500 g.	+ 5 g.
		Above 500 g.	—
			+10 g.
2 Kg.	20 g.	From 0 upto and including 1 kg	—
		Above 1 kg	+10 g.
			—
			+20 g.
5 kg.	50 g.	From 0 upto and including 2.5 kg.	—
		Above 2.5 kg.	+25 g.
			—
			+10 g.
			—

Note: The maximum permissible errors at the time of reverification, if any, shall be double of those specified in table 32.

By Order and in the name of the Governor of Karnataka

G. S. JOSHI,
Under Secretary to Government.
Rural Devt. & Coopn. Department

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